



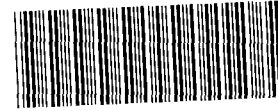
Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

AUG 26 1992

92-DOE-9992

Ms. Mary Lynn Tucker
Assistant County Attorney
Jefferson County Courthouse
Golden, CO 80419



000020293

Dear Ms. Tucker:

Please find enclosed the Jefferson County Remedy Lands Semi-annual Soils Report for Summer, 1992. The enclosed report summarizes revegetation activities on the Jefferson County Remedy Lands during the first half of 1992. The Remedy Lands activities are directed by the 1985 Settlement Agreement, McKay versus the United States. The aggressive revegetation program initiated in 1991 continues and was aided by the relatively moist weather during the period.

If you have any questions, please call Robert H. Birk of my staff at 966-5921.

Sincerely,

Frazer R. Lockhart
Director
Environmental Restoration Division

cc w/ Attachment:
J. Cicco, EM-453
S. LeBreche, Jefferson County Open Space
J. Jacobus, Jefferson County
G. Finstad, SCS
B. Lavelle, EPA
C. Spreng, CDH

JEFFERSON COUNTY REMEDY LANDS SEMI-ANNUAL REPORT - SUMMER 1992

INTRODUCTION

This semi-annual report for the summer of 1992 summarizes the activities conducted on the Jefferson County Remedy Lands during the first half of 1992. This report also contains the monitoring results of the 1991 reseeded work and results of vegetation monitoring by the consulting ecologist, Dr. Sam Bamberg. Revegetation activities were conducted during the fall of 1991 and were described in the January 1992 report.

Final approval of the Operable Unit No. 3 (OU 3) Remedial Investigation (RI) Work Plan was received on March 17, 1992 from the Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH). The RI Work Plan is directed by the Interagency Agreement (IAG) between the Department of Energy (DOE), EPA, and CDH to investigate contamination from Rocky Flats Plant to offsite areas. The Jefferson County Remedy Lands are contained within OU 3, and will be sampled during the field sampling activities that were started in May 1992. The OU 3 RI Report, which will summarize field sampling results, is scheduled for final approval in January 1994. Field sampling results from the Remedy Lands will be reported to Jefferson County as the data becomes available.

SUMMARY OF MONITORING ACTIVITIES

The success of the 1991 revegetation activities was evaluated during the spring and early summer of 1992. A brief summary of the monitoring results are as follows:

- New seedlings from the 1991 reseeded are present. However, their abundance varies considerably across the remediated lands.
- New seedling growth was enhanced by the favorable growing conditions experienced during spring and early summer.
- Weed growth was also enhanced and remains a significant competitor to the more desirable seeded species.
- Prairie dogs are still common in most of the remediated lands.
- The desirable native plant species are slowly becoming established, and with time, will predominate as a major component of the plant cover.

Dr. Bamberg's detailed monitoring report is labeled Appendix A and is attached at the end of this report.

PLANNED FUTURE ACTIVITIES

As identified in past reports to Jefferson County and in Dr. Bamberg's monitoring report conclusions, weeds continue to compete with the established and desired plant species. An aggressive weed control program is being developed and will include mechanical and chemical

weed suppression. This program will be a two-to-three year effort and will target specific weed species and their growth cycles.

The January 1992 report discussed the possibility of reseeding problem areas to eliminate the weed species. However, reseeding will not occur until after the weed population is evaluated next spring.

The ability to schedule future tilling operations is limited by lack of revegetation success. The Settlement Agreement states that tilling of the alternate set of strips shall not begin until the first set is successfully reestablished in native plant species. Results of the OU 3 Remedial Investigation will also be used to plan future activities on the Remedy Lands.

APPENDIX

RA Consultants

Environmental Consultants

26050 E. Jamison Circle, Aurora, CO 80016

(303) 690-7402

MEMORANDUM

To: Michael Guillaume

From: Sam Bamberg

Date: July 16, 1992

Re: Results of the monitoring of the status and present conditions of vegetation on Remedial Action Program acreage on Jefferson County Open Space Land.

A mid-summer monitoring of the vegetation conditions on the revegetated remediation lands was completed on July 16, 1992. The purpose of the monitoring was to determine:

- germination success and growth of plant species sown in Fall 1991
- growth and abundance of weed species during the present 1992 growing season as compared to native species, and effects of last year's mowing
- extent of reinvasion of the remediation areas by prairie dogs
- areas with poor germination or establishment
- present status of the revegetation activities determined during the 1991 season's program

The areas were monitored by general observations and walking of portions of the remediation strips. Plant species composition, and the vigor and growth of vegetation was noted. General releve plots were examined for cover by dominant species, and the total numbers and types of species in the plot were recorded. The relative abundance of native grasses and perennials compared to weedy flora was observed. Seedling germination and growth of the seed mix plant species were noted in the areas sown last fall.

The weather this spring and early summer has been favorable for plant growth with abundant soil moisture, and good spacing of rainy periods. The vegetation has responded with abundant germination and growth of annual and weedy vegetation, and with good flowering and seed set of most cool-weather species and perennial grasses, forbs, cactus and shrubs. Recent summer rains will also provide soil moisture for the warm season grasses, and the late flowering shrubs and forbs.

The results of the monitoring are as follows:

Germination success and growth of plant species sown in Fall 1991

Seedlings of some of the grasses were noted in the less rocky areas in which weed control had been effective by mowing. The grasses noted were western wheatgrass, big bluestem, blue grama, and sideoats grama. The seedlings were small, but had good survival and were developing well due to the favorable growing season. The seedlings were not abundant, and in some areas were sparse due to the competition with the more aggressive weedy species. Other seedlings observed that were in the plant seed mix were purple prairie clover, blue flax, and rabbitbrush. There should be more evidence of germination and growth of the seeded species after this season's rains and favorable growing conditions.

Growth and abundance of weed species as compared to native species

The weedy species had good germination and growth in many areas of the remediated land due to the generally good conditions for plant growth. Weeds were still dominant in the more rocky and disturbed soils of north areas and in a few portions of the southern areas. The last year's weeds had produced a large crop

of seeds that acted as a seed source for this year's crops, and the mowing last summer occurred too late to control this. Many of the weeds are persistent perennial or biennial species that are difficult to eradicate in one season. The most abundant weeds were musk thistle, canada thistle, field bindweed, mullein, cheatgrass, ragweed, and smooth brome. The proportion of weedy vegetation varied from almost pure stands of weeds in sloping, disturbed, and prairie dog infested areas, to fairly evenly proportioned stands of a mixed native and planted species to weeds. The most successful native competitors for the weed species were western wheatgrass, slender wheatgrass, fringed sage, globemallow, yucca, and hairy goldenaster. Of the plant species sown last year in the seed mix, western wheatgrass was the best competitor for the weedy species.

Reinvasion of the remediation areas by prairie dogs

Prairie dogs were again common in most of the remediated lands by the mid-summer monitoring period, including areas just east of Indiana Street. The number of prairie dogs was still reduced compared to last year, and many of the burrows were inactive. Some of the invading prairie dogs were digging new burrows and included some different areas that were not occupied last year. The effects of the prairie dogs was not as evident, but could have been masked by the rank growth of much tall vegetation, particularly such weeds as musk thistle and mullein which the prairie dogs were not cutting down. The reduced population of prairie dogs had allowed much better plant growth over much of the remediated acreage.

Areas with poor germination or establishment

The most evident areas with poor germination and growth of native species were those areas that had (1) sloping and rocky surfaces, (2) vigorous weedy vegetation which produced abundant seeds, and (3) previously been heavily grazed by prairie dogs. A combination of these factors has produced areas which are very slowly reverting to native species, or are still composed almost entirely of weedy species. Monitoring of these areas this summer showed that very few of the desirable native plant species sown this past year were able to germinate and survive where the three factors listed above were dominant. It was estimated that about 25% of the northern and about 10% of the southern area had little native vegetation, and were mostly weeds.

Present status of the revegetation activities

The most persistent and obvious problem remains the numerous and abundant weeds which dominate some areas and are still abundant over much of the remediated lands. Native or desirable plant species are becoming established slowly in many portions of the areas, and the proportion of this type of native vegetation will increase as these young plants become established. Natural plant succession on previously disturbed sites, such as railroad grades and borrow areas for dam and reservoir construction, cultivation for crops, or after heavy livestock grazing, has shown that native species generally take 25 to 40 years or more to become reestablished. The length of time to reestablish a desirable vegetation type depends of the original disturbance (longer for soil plowing or tillage), the subsequent management of the disturbed area, and the specific weather patterns for a number of years. The time required to promote a desirable and stable plant vegetation type can be reduced by effective management. The most important is to prevent further disturbance of the soil surface, and allowing natural succession by native species to replace the weeds.

Depending on the results of the continuing monitoring, the following activities or procedures are recommended for future management and promotion of desirable vegetation communities:

- weed control by periodic mowing and selective application of pre-emergent herbicides
- reseeding selected areas that had poor germination or establishment of seeded species
- continued prairie dog control in the remediation areas, if reinfested from the surrounding uncontrolled populations
- continued protection from disturbances

The remediation lands should be assessed yearly for native plant establishment, and to determine how to promote more natural plant succession to a less weedy plant community. The goal should be longer range plans (3 to 5 years, and 5 to 10 years) and to promote establishment of a stable, more natural grassland vegetation.